No. 21-1965

CAPITAL CASE

IN THE UNITED STATES COURT OF APPEALS FOR THE EIGHTH CIRCUIT

STACEY JOHNSON, et al., Appellants,

v.

ASA HUTCHINSON, et al., Appellees

PETITION FOR REHEARING *EN BANC*

LISA G. PETERS
FEDERAL DEFENDER

JOHN C. WILLIAMS
Ark. Bar. 2013233
Ass't Fed. Pub. Def.
1401 W. Capitol Ave.
Suite 490
Little Rock, AR 72201
(501) 324-6114
john_c_williams@fd.org

JOSEPH WARDEN
Del. Bar No. 5401
Fish & Richardson P.C.
222 Delaware Ave.
17th Floor
Wilmington, DE 19801
(302) 778-8424
warden@fr.com

KENTON W. FREEMAN, JR.
DC Bar No. 1671507
Fish & Richardson P.C.
1000 Maine Ave., SW
Suite 1000
Washington, DC 20024
(202) 626-6427
will.freeman@fr.com

Counsel for Appellants

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RULE 35(b)(1) STATEMENT

Rehearing is warranted in this method-of-execution case because the panel's opinion conflicts with Supreme Court precedent. It does so in two different ways. First, by requiring prisoners to present a "scientific consensus" that an execution protocol will cause the person being executed to experience pain, the panel impermissibly exceeds the Supreme Court's Eighth Amendment standard. Second, by failing to consider Appellants' evidence of alternative execution methods, the panel overlooks the Supreme Court's instruction that assessment of a method-of-execution challenge "is a *necessarily* comparative exercise." *Bucklew v. Precythe*, 139 S. Ct. 1112, 1126 (2019). Rehearing is warranted to correct the panel's misapprehension of controlling law—a misapprehension that, for all practical purposes, "precludes the kind of method-of-execution claim th[e] [Supreme] Court told prisoners they could bring." *Nance v. Ward*, 142 S. Ct. 2214, 2225 (2022).

BACKGROUND

This case began in 2017, when the Governor of Arkansas set execution dates for eight men. These men sued, alleging that the State's

execution method—a lethal injection consisting of 500 mg of the sedative midazolam, followed by 100 mg of the paralytic vecuronium bromide, followed by 240 mEq of the heart-stopping agent potassium chloride—violates the Eighth Amendment.

The district court enjoined the 2017 executions, but this Court, sitting en banc, reversed. Foreshadowing the issue presented in this rehearing petition, the Court said that "[i]f there is no scientific consensus and a paucity of reliable scientific evidence concerning the effect of a lethal-injection protocol on humans, then the challenger might well be unable to meet this burden [to show an 'unacceptable risk of pain' under the Eighth Amendment]." *McGehee v. Hutchinson*, 854 F.3d 488, 493 (8th Cir. 2017) (en banc).

Of the eight original plaintiffs, four were executed. One executed plaintiff, Kenneth Williams, was observed by an AP reporter to have "lurched forward just violently up against the leather restraint . . . 15 times in a row" and to have emitted "a gasp or a moan." Tr. 40, 42. After additional plaintiffs intervened, the district court held a bench trial on

whether Arkansas's method of execution violates the Eighth Amendment.

A key focus of the trial was whether midazolam is adequate to prevent a prisoner from feeling suffocation (which the second drug causes on its own) and searing (which the third drug causes on its own). As was well established at trial, midazolam is not an analgesic, meaning that it does not block pain. Midazolam's adequacy in the execution protocol thus depends on the theory that it anesthetizes the prisoners to such a degree that they feel no pain and are not roused by the other protocol drugs.

On this issue, plaintiffs presented proof from Dr. Craig Stevens, a pharmacologist, and Dr. Gail Van Norman, an anesthesiologist. Both opined that, based on their experience and reading of the scientific literature, midazolam (at any dose) does not render the prisoners insensate to pain from the second and third drugs.

Drs. Stevens and Van Norman described two studies showing that midazolam stops producing a sedative effect at dosages of around 0.2 mg/kg to 0.4 mg/kg—tantamount to 20 mg to 40 mg in a 220-pound

man. Dr. Van Norman drove home the import of this "ceiling effect" in her description of studies that rely on the isolated-forearm technique, a method that allows anesthesiologists to judge patients' awareness during anesthesia. One study by Russell (Pls.' Ex. 36, App'x 286–90) found that 72% of patients who received midazolam remained aware during their surgery. As Dr. Van Norman explained, the Russell-study patients "got between .3 and .6 milligrams per kilo of midazolam." Tr. 1475. Dosages given in the study were "higher in the range of the ceiling effect." Tr. 545. Because the patients had already received a ceiling-effect dosage of midazolam, more of the drug would not have sedated them further.

The Russell-study patients also received an analgesic as part of their anesthesia. The prisoners do not have that luxury. Without a painkiller on board, the Russell study suggests that approximately three-quarters of prisoners will feel severe pain during execution.

The State presented its own experts: Dr. Joseph Antognini, an anesthesiologist, and Dr. Daniel Buffington, a pharmacist. Dr. Buffington was the only expert among the four to deny the existence of

a ceiling effect at all. (The panel does not address the flaws of Dr. Buffington's opinion, but Appellants discussed them in detail in the opening brief.) Dr. Antognini attempted to cast doubt on the dosage at which the ceiling effect occurs, but he is previously on record as agreeing that "at 20 to 25 milligrams, you would expect for it to start leveling off." PI Tr. 1027. And Dr. Antognini's lukewarm opinion about the adequacy of midazolam—a drug that he "wouldn't use . . . in 2019" and "wouldn't use . . . for a procedure by itself," Tr. 912–13—is contradicted by the American Society of Anesthesiologists. This body, which bestowed upon Dr. Antognini the self-professed "honor" of electing him a fellow, includes "benzodiazepines, e.g., midazolam, diazepam," on its list of "sedatives not intended for general anesthesia" Tr. 887, 979–81.

Plaintiffs also presented detailed evidence on the feasibility and availability of the firing squad as an alternative to the midazolam protocol. Dr. James Williams, an emergency-room doctor who trains law-enforcement officers on firearm techniques and who has himself been shot in the chest with a high-caliber bullet, opined that execution

by firing squad conducted under a protocol like Utah's would lead to a quick and painless death. Plaintiffs presented testimony from Utah prison officials on how the method works in practice. Dr. Williams also testified as to the feasibility of the method for a corrections department—an opinion corroborated by the ADC director's admission that she had previously contacted Utah about the firing squad. "I didn't feel like it was something that I could say we could not do," the director testified. "I remember thinking that it wouldn't be impossible to happen here if it were authorized." Tr. 1417–18.

The district court rejected the Eighth Amendment claim. In doing so, the court concluded that "[e]ven if there is general medical consensus that Midazolam has a ceiling effect, there is no such consensus on the dose of Midazolam at which a ceiling effect is exhibited." Add. 69. The court drew no credibility determinations about the experts and did not engage with the scientific authorities presented at trial.

Plaintiffs then filed a motion for new trial based on newly available evidence concerning how the federal government obtained pentobarbital for multiple executions it began conducting in 2020. R. Doc. 210, App'x

514. Dr. Stevens's testimony supports the conclusion that pentobarbital mitigates the risk of inadequate sedation inherent in the midazolam protocol. PI Tr. 247; Tr. 366–73. And by the ADC director's own admission, pentobarbital is preferred to midazolam. PI Tr. 1221. The district court nonetheless denied the motion.

The panel affirmed the judgment and the order denying a new trial. Its opinion focuses on the proof concerning the ceiling effect. Though Drs. Stevens and Van Norman presented studies pinning the ceiling effect at between 0.2 mg/kg and 0.4 mg/kg—that is, approximately the dose at which the Russell-study patients were shown to remain aware—the State's experts "presented competing opinions." Op'n at 5. Without acknowledging Dr. Antognini's earlier contrary opinion, the panel noted his critique of the ceiling-effect studies and his belief that the "studies may suggest that midazolam has a ceiling effect, but do not prove that one exists." *Id.* The panel also cited Dr. Buffington's unadorned outlier opinion that midazolam has no ceiling effect at all. Finally, the panel cited Dr. Van Norman's agreement on cross-examination that one of the two studies "never reached the full ceiling effect" and that "there is no

scientific consensus on the dose at which the ceiling effect occurs."[1] *Id.* The panel concluded that plaintiffs thus failed to meet their burden under the Eighth Amendment: "With no scientific consensus and a paucity of reliable scientific evidence concerning the effect of large doses of midazolam on humans, the district court did not clearly err." *Id.*

The panel's conclusion about a lack of scientific consensus drove it to reject Appellants' other arguments. In response to Appellants' request for additional findings on the scientific evidence and expert credibility, the panel deemed a remand unnecessary because there was sufficient proof to support an absence of scientific consensus. *Id.* at 6. The panel also rejected Appellants' request for a new trial to consider the availability of pentobarbital. The newly available proof on this point "was not material": "The prisoners failed to establish that the State's existing method was sure or very likely to cause needless suffering, so the State was not required to consider alternative methods." *Id.* Consistent with this pronouncement, the panel said nothing about

[1] Dr. Van Norman's testimony on this point was as follows: "There is a very strong scientific consensus that a ceiling effect exists, but no one has stated what that dose will be. . . . [T]he studies tend to indicate that it's around .4 milligrams per kilogram." Tr. 571.

Appellants' argument that a firing squad, unlike the midazolam protocol, would cause quick and painless death.

Judge Kelly concurred in the judgment. Though she found that the district court did not err under circuit precedent, she urged reconsideration of that precedent. Despite Appellants having presented "a substantial amount of scientific evidence supporting their position," this Court's "demand that prisoners present overwhelming 'scientific evidence' and show a 'scientific consensus' about the effect of drug dosages that will never ethically be tested on humans has shown itself to be an insurmountable task." *Id.* at 7–8. As Judge Kelly explained, no other circuit has adopted the "scientific consensus" standard and "[e]stablishing a scientific consensus is not required under Supreme Court precedent." *Id.* at 10. The concurrence explains that the Court's standard creates a Catch-22: "[O]ne of the reasons for this lack of consensus is the lack of reliable clinical studies," but "[b]ecause a study using 500 mg of midazolam cannot be conducted, there will continue to be a degree of speculation—and thus a lack of consensus—about the

effect of such a dose." *Id.* at 11–12. Judge Kelly summarized her concern:

> In choosing an execution protocol, states can select dosages that have not been reliably studied, and experts will likely continue to disagree about the effect of those dosages on human subjects and about the degree of uncertainty involved. That is, of course, the nature of science and the scientific method. But if those disagreements persist—and based on the evidence presented in this case, a reliable study that would answer the midazolam ceiling effect question is not currently possible—it is unclear how a prisoner could ever prevail in a method-of-execution challenge to a lethal injection protocol under this circuit's current standard.

Id. at 12.

REASONS FOR GRANTING REHEARING

A. The Supreme Court has never required prisoners to present a "scientific consensus" that a state's execution method causes pain.

En banc rehearing is necessary to correct a manifest misconstruction of Supreme Court precedent. In contrast to the panel's conclusion and this Court's current legal standard, the Supreme Court has never required a prisoner to present a "scientific consensus" that an execution method will cause severe pain in order to successfully challenge that method. The "scientific consensus" standard derives from a statement by a single Justice in a concurrence to a plurality opinion. When the

same Justice later wrote for the Court on the methods standard, his preferred requirement of "scientific consensus" did not appear in that opinion. Nor has the Court ever adopted that standard.

The Supreme Court's modern development of the Eighth Amendment methods standard begins with *Baze v. Rees*, 553 U.S. 35 (2008). In that case, Chief Justice Roberts, joined by Justices Kennedy and Alito, wrote that the Court's precedents do not require a plaintiff to prove the actual infliction of pain: "Our cases recognize that subjecting individuals to a risk of future harm—not simply actually inflicting pain—can qualify as cruel and unusual punishment." *Id.* at 49. The Chief Justice further elaborated:

> [T]he conditions presenting the risk must be *sure or very likely* to cause serious illness and needless suffering, and give rise to sufficiently *imminent* dangers. We have explained that to prevail on such a claim there must be a substantial risk of serious harm, an objectively intolerable risk of harm that prevents prison officials from pleading that they were subjectively blameless for purposes of the Eighth Amendment.

Id. at 50 (internal quotation marks and citations omitted).

Writing for himself alone in a concurring opinion, Justice Alito applied an additional gloss to this standard. "[A]n inmate should be

required to do more than simply offer the testimony of a few experts or a few studies," he said. "Instead, an inmate challenging a method of execution should point to a well-established scientific consensus." *Id.* at 67.

That is not the path the Court later took. When the Justices next considered the methods standard, they produced an opinion that commanded a majority. Justice Alito wrote that opinion. And the opinion said not a word about the need for scientific consensus. Instead, the Court adopted the standard that Chief Justice Roberts stated in his *Baze* plurality opinion. *See Glossip v. Gross*, 576 U.S. 863, 877 (2015). A prisoner must establish "that the State's lethal-injection protocol creates a demonstrated risk of severe pain" that is "substantial when compared to the known and available alternatives." *Id.* at 878. Stated differently, "an inmate challenging a protocol bears the burden to show, based on the evidence presented to the court, that there is a substantial risk of severe pain." *Id.* at 882.

The Court has continued to stay that course each time it has taken up a question related to lethal injection. *See Nance*, 142 S. Ct. at 2220

(plaintiff must show a "substantial risk of serious harm—severe pain over and above death itself"); *Bucklew*, 139 S. Ct. at 1130 (plaintiff must show an alternative that "would significantly reduce a substantial risk of severe pain"). Indeed, in *Bucklew* the Court spent pages assessing the evidence about the risk of pain from the method under challenge—an approach that would have been superfluous had the only question been whether there is a scientific consensus about that method (which obviously there was not). *See Bucklew*, 139 S. Ct. at 1130–33.

By going far beyond the prevailing standard, the panel's "scientific consensus" requirement reduces constitutional protections in a manner the Supreme Court has not authorized. En banc consideration is necessary to bring this Court's legal test into conformity with the Supreme Court's.

B. The "necessarily comparative exercise" of an execution challenge requires consideration of alternatives.

The panel also strayed from Supreme Court precedent by treating the question of risk (or scientific consensus) as an independently sufficient basis for adjudicating a method-of-execution claim. Contrary to the panel's approach, assessment of a methods claim "is a *necessarily*

comparative exercise." *Id.* at 1126. When testing an execution method under the Eighth Amendment, the risk of pain inherent in the method cannot be judged by itself—it must be judged against a proposed alternative.

At one time the Supreme Court did appear to treat risk and alternatives as independent "prongs" of a legal test. *See Glossip*, 576 U.S. at 878. But *Bucklew* put a stop to that in clear terms. Faced with the argument that a court can judge the cruelty of an execution method *per se*, the Court held:

> Distinguishing between constitutionally permissible and impermissible degrees of pain . . . is a *necessarily* comparative exercise. To decide whether the State has cruelly "superadded" pain to the punishment of death isn't something that can be accomplished by examining the State's proposed method in a vacuum, but only by comparing that method with a viable alternative. . . . As we've seen, when it comes to determining whether a punishment is unconstitutionally cruel because of the pain involved, the law has always asked whether the punishment "superadds" pain well beyond what's needed to effectuate a death sentence. And answering that question has always involved a comparison with available alternatives, not some abstract exercise in "categorical" classification. . . . To determine whether the State is cruelly superadding pain, our precedents and history require asking whether the State had some other feasible and readily available method to carry out its lawful sentence that would have significantly reduced a substantial risk of pain.

Bucklew, 139 S. Ct. at 1126–27 (citations and internal quotation marks omitted); *see also Nance*, 142 S. Ct. at 2220 (repeating *Bucklew*'s "comparative assessment" requirement).

The panel misapplies the Supreme Court's comparative standard by failing to consider Appellants' alternative execution methods—indeed, in the context of the new-trial motion, by saying that evidence concerning pentobarbital is "not material." Op'n at 6. The question is not, as the panel put it, simply whether there is a scientific consensus about the ceiling effect of midazolam. The question is whether a risk of pain inherent in the midazolam protocol is substantial when compared to Appellants' proposed alternatives. Perhaps an assessment of alternatives would not be required if an execution method poses *no* risk of pain. But no one would credibly say—and Appellants do not understand the panel to say—that the midazolam protocol carries no risk of pain.

Say that a prisoner presented a perfectly painless method of execution as a feasible and available alternative to the state's current method (whatever that current method may be). Under this Court's

test, the alternative would be "not material" unless there is a scientific consensus that the current method causes pain. But under the Supreme Court's test, the state would be required to implement the perfectly painless method, because continued use of the current method would superadd pain that state officials could knowingly avoid.

In sum, the important question under the Eighth Amendment is not whether a scientific consensus has cohered around a state's method of execution. The important question, per Supreme Court precedent, is whether adoption of an alternative would substantially reduce a risk of severe pain. A court cannot make that determination without the sort of comparative risk assessment that the panel omitted here.

C. The panel's opinion cuts off a class of claim that the Supreme Court has explicitly kept open.

The upshot of the panel's "scientific consensus" standard is to eliminate, for all practical purposes, method-of-execution challenges under the Eighth Amendment. That too contradicts the Supreme Court's guidance that a prisoner's burden to challenge his execution method should be kept "within reasonable bounds." *Nance*, 142 S. Ct. at

2220. A prisoner's burden is significant, but it is not the impossible one that the panel's opinion imposes.

Judge Kelly's concurrence speaks pointedly to the impact of the "scientific consensus" standard in the context of the midazolam protocol. There is unlikely to ever be "scientific consensus" on the precise ceiling effect of midazolam—the proof the panel calls for here. To produce a definitive study on how 500 mg midazolam affects a human being would be unethical. The inquiry has zero utility beyond the realm of capital punishment. Midazolam is not used in the medical field to provide anesthesia, as Dr. Antognini attested. No scientist will ever produce the sort of definitive study the panel demands.

Sensibly, then, the Supreme Court does not require one. Determination of whether there is "a substantial risk of severe pain" must be "based on evidence presented to the court." *Glossip*, 576 U.S. at 882. Appellants presented a significant amount of evidence geared toward whether midazolam will render them insensate to pain. It was the district court's job to judge that evidence, not to abdicate to an absence of "scientific consensus."

Though Judge Kelly's concurrence focuses on how the "scientific consensus" rule affects challenges to the midazolam protocol, the panel's opinion undermines challenges to any method. Suppose that a state (as Tennessee has done and South Carolina has attempted to do) brings back the electric chair—a barbaric practice that found legal disapproval when it did not wither on its own. *See State v. Mata*, 745 N.W.2d 229 (Ne. 2008) (finding electric chair cruel and unusual); *Bryan v. Moore*, 528 U.S. 1133 (2000) (dismissing challenge to electric chair in light of state's representation that petitioner's death sentence would be carried out by lethal injection). How would a prisoner challenge this method within this circuit? He would not be able to produce a definitive scientific study showing that the electric chair causes suffering—no such study could be conducted. Naturally, the proof would entail a battle of the experts. *See* Kathryn Casteel, Greenville News, "Final Testimony Day: Expert Witnesses Debate Pain, Consciousness in SC Execution Protocols," Aug. 4, 2022, *available at* https://bit.ly/3ewQ41j. But experts battling—whatever their credibility—implies a lack of scientific consensus. So rather than weigh and judge the evidence, a

court need only cite contrary opinions to dismiss the challenge. And the court certainly need not consider any less painful method that the prisoner presents. Without a definitive showing that the electric chair causes severe pain, any alternative is "not material."

Eliminating methods challenges goes against what the Supreme Court said in *Nance.* The issue there was whether a prisoner must plead an alternative method that is already written in state statute to avoid moving the claim from § 1983 to habeas. As with application of the "scientific consensus" standard, moving the claim to habeas would not have literally eliminated such challenges, but it would have done so for all practical purposes because of the numerous procedural bars in habeas. The Court declined to cut off these claims and instead emphasized that prisoners do not bear an impossible burden when challenging an execution method. "[A]llowing an inmate to propose a method not authorized by the State keeps his burden within reasonable bounds." *Nance*, 142 S. Ct. at 2220 (internal quotation marks omitted). The Court refused to interpret the law in a manner that would eliminate methods challenges: "On the Eleventh Circuit's view, Georgia

law effectively prevents an inmate like Nance from putting forward an out-of-state alternative. And Georgia law thereby precludes the kind of method-of-execution claim this Court told prisoners they could bring." *Id.* at 2225.

The panel's opinion achieves by other means an outcome that the Supreme Court has rejected. For that reason, also, the Court should rehear this case en banc.

CONCLUSION

This Court should not entomb methods challenges in the sepulcher of scientific consensus. To do so contradicts Supreme Court precedent, which requires a court to weigh competing evidence of comparative risk. The Court should vacate the panel's decision. On en banc rehearing, it should articulate the correct standard and grant relief to Appellants as requested in the earlier briefing.

Dated: October 14, 2022

Respectfully submitted,

LISA G. PETERS
FEDERAL DEFENDER

/s/ John C. Williams

JOHN C. WILLIAMS
Ark. Bar 2013233
Ass't Federal Public Defender
1401 W. Capitol Ave, Ste. 490
Little Rock, AR 72205
(501) 324-6114
john_c_williams@fd.org

JOSEPH WARDEN
Del. Bar No. 5401
Fish & Richardson P.C.
222 Delaware Ave., 17th Floor
Wilmington, DE 19801
(302) 778-8424
warden@fr.com

KENTON W. FREEMAN, JR.
DC Bar No. 1671507
Fish & Richardson P.C.
1000 Maine Ave., SW Ste. 1000
Washington, DC 20024
(202) 626-6427
will.freeman@fr.com

Counsel for Appellants

CERTIFICATES OF COMPLIANCE

This rehearing petition complies with the rules governing type-volume limitations in Fed. R. App. P. 35(b)(2) because it contains 3,800 words, excluding portions exempted by Fed. R. App. P. 32(f).

It complies with the typeface requirements of Fed. R. App. P. 32(a)(5) and the type-style requirements of Fed. R. App. P. 32(a)(6) because it has been prepared in 14-point Century font—a proportionally spaced typeface—using Microsoft Word 365.

/s/ John C. Williams
JOHN C. WILLIAMS

CERTIFICATE OF SERVICE

I hereby certify that on October 14, 2022, I filed the foregoing using this Court's CM/ECF system, which shall automatically serve notice on opposing counsel.

/s/ John C. Williams
JOHN C. WILLIAMS

Appendix

United States Court of Appeals
For the Eighth Circuit

No. 21-1965

Stacey Eugene Johnson,

Plaintiff - Appellant,

Bruce Earl Ward,

Plaintiff - Appellant,

Don William Davis; Terrick Terrell Nooner,

Plaintiffs - Appellants,

Justin Anderson; Ray Dansby; Gregory DeCay; Kenneth Isom; Alvin Bernal Jackson; LaTavious Johnson; Timothy Wayne Kemp; Brandon E. Lacy; Zachariah Marcyniuk; Roderick Leshun Rankin; Andrew Sasser; Thomas Springs; Mickey Thomas,

Intervenor Plaintiffs - Appellants,

v.

Asa Hutchinson, Governor of the State of Arkansas, in his official capacity; Dexter Payne, Director, Arkansas Division of Correction,

Defendants - Appellees.

Appeal from United States District Court
for the Eastern District of Arkansas - Central

Submitted: January 12, 2022
Filed: August 16, 2022

Before COLLOTON, KELLY, and KOBES, Circuit Judges.

COLLOTON, Circuit Judge.

Stacey Johnson and other death-row prisoners in Arkansas sued the governor and a corrections official, arguing that Arkansas's three-drug execution protocol violates the Eighth Amendment. After a bench trial, the district court[*] found that the prisoners failed to establish a violation, and denied a motion for new trial. We affirm.

I.

In February 2017, Governor Hutchinson of Arkansas scheduled the executions of Stacey Johnson and seven other prisoners for April 2017. The eight men and a ninth prisoner sued the governor and the director of the Arkansas Division of Correction. They alleged that Arkansas's three-drug execution protocol violates the Eighth Amendment. The prisoners also sought a preliminary injunction to stay the executions pending trial. The district court granted a preliminary injunction, but this court vacated the order. *McGehee v. Hutchinson*, 854 F.3d 488 (8th Cir. 2017) (en banc) (per curiam). The case then proceeded to trial.

Arkansas's execution protocol involves several steps. First, a prison official administers 500 mg of a sedative called midazolam to the prisoner. The official next performs a number of physical tests to assess whether the inmate is conscious; if the

[*]The Honorable Kristine G. Baker, United States District Judge for the Eastern District of Arkansas.

inmate is responsive, then the official administers an additional 500 mg of midazolam. The official then administers vecuronium bromide, a paralytic drug. Finally, the official administers potassium chloride, which causes the prisoner's heart to stop.

After trial, the district court entered judgment in favor of the state officials on the Eighth Amendment claim. The court found that the prisoners had failed to prove that the protocol created a substantial risk of severe pain. Alternatively, the court found that the prisoners had failed to show that a feasible and readily implemented alternative would significantly reduce a risk of severe pain. The prisoners later moved for a new trial, asserting newly discovered evidence about the availability of pentobarbital for use as a single-drug alternative to the execution protocol. The court concluded that the evidence was cumulative and unlikely to produce a different result, and thus denied the motion.

The prisoners appeal. We review the district court's factual findings for clear error and its legal conclusions *de novo*.

II.

To prove a method-of-execution claim under the Eighth Amendment, an inmate must satisfy two elements. First, he must demonstrate that the State's method "presents a risk that is '*sure or very likely* to cause serious illness and needless suffering,' and give rise to 'sufficiently *imminent* dangers.'" *Glossip v. Gross*, 576 U.S. 863, 877 (2015) (quoting *Baze v. Rees*, 553 U.S. 35, 50 (2008) (plurality opinion)) (internal quotation omitted). The risk must be "a 'substantial risk of serious harm,' an 'objectively intolerable risk of harm' that prevents prison officials from pleading that they were 'subjectively blameless for purposes of the Eighth Amendment.'" *Id.* (quoting *Baze*, 553 U.S. at 50 (plurality opinion)). Second, he "must show a feasible and readily implemented alternative method of execution that

would significantly reduce a substantial risk of severe pain and that the State has refused to adopt without a legitimate penological reason." *Bucklew v. Precythe*, 139 S. Ct. 1112, 1125 (2019).

The prisoners argue that the district court clearly erred in finding that they failed to demonstrate that the Arkansas execution protocol creates a substantial risk of severe pain. Their argument proceeds as follows: They posit that midazolam has a so-called "ceiling effect" at a dose no greater than 0.4 mg/kg, after which increasing the dosage does not produce greater sedative effect. At a dosage of 0.4 mg, they say, at least 72% of persons sedated with midazolam will be aware of pain. Because midazolam does not suppress pain, they contend, prisoners who remain sensate will experience severe pain when the second and third drugs in the protocol are administered.

The district court rejected the prisoners' assertion that midazolam has a ceiling effect at 0.4 mg/kg. The court assumed for the sake of analysis that midazolam has a ceiling effect, but concluded that there is no medical consensus about the dose at which the effect occurs. The court also found that there are no human studies that have used doses large enough to establish a ceiling effect.

The prisoners argue that these findings are clearly erroneous. To establish that individuals sedated with midazolam are sure or very likely to remain sensate, the prisoners rely on a study by Dr. Ian Russell. Seventy-two percent of the participants in the Russell study responded to oral commands after sedation with midazolam. But the Russell study administered only 0.2 mg/kg of midazolam to anesthetize the participants, with an additional 0.15 mg/kg administered over the course of each hour of surgery. This dose, which is equivalent to 20 mg plus 15 mg per hour for a 220-pound man, is far less than the 500 mg administered as part of the execution protocol. Unless midazolam has a ceiling effect at or below the dosage used in the Russell

study, the study does not compel the conclusion that prisoners are sure or very likely to remain aware of pain after receiving the doses of midazolam used in the protocol.

In an effort to make that showing, the prisoners cite expert testimony from Dr. Craig Stevens and Dr. Gail Van Norman that midazolam has a ceiling effect that occurs at a dose between 0.2 to 0.4 mg/kg. These experts relied on two medical studies, which are known by the names of their principal authors as the Inagaki study and the Miyake study.

The State's experts, however, presented competing opinions. Dr. Joseph Antognini and Dr. Daniel Buffington disputed the proffered interpretations of the Inagaki and Miyake studies. Dr. Antognini testified that the studies may suggest that midazolam has a ceiling effect, but do not prove that one exists. He stated that when searching for a ceiling effect, researchers typically test the clinical effects of a drug across a broad range of dosages, but that the Inagaki and Miyake studies did not do so. Dr. Buffington agreed that the Miyake study failed to demonstrate a ceiling effect, and opined that no study has established that midazolam has a ceiling effect. On cross-examination, the prisoners' expert Dr. Van Norman testified that a ceiling effect "can be seen to start at around .4 milligrams per kilogram," but that the study "never reached the full ceiling effect." She also acknowledged that there is no scientific consensus on the dose at which the ceiling effect occurs.

With no scientific consensus and a paucity of reliable scientific evidence concerning the effect of large doses of midazolam on humans, the district court did not clearly err in finding that the prisoners failed to demonstrate that the Arkansas execution protocol is sure or very likely to cause severe pain. Accordingly, the district court properly dismissed the claim under the Eighth Amendment.

The prisoners argue that additional findings of fact are required, because the court failed adequately to address their evidence. After a bench trial, a district court

"must find the facts specially and state its conclusions of law separately." Fed. R. Civ. P. 52(a). But the court need not address every piece of evidence or disputed point; it is sufficient for the court to "set forth its reasoning with enough clarity that the appellate court may understand the basis of the decision." *Leonard v. Dorsey & Whitney LLP*, 553 F.3d 609, 613 (8th Cir. 2009).

The findings here are adequate. Although the court did not specifically discuss the Miyake and Inagaki studies, the court did address the expert testimony regarding any midazolam ceiling effect, and the experts based their opinions on the studies. Consistent with Dr. Van Norman's testimony, the court concluded that there was no scientific consensus regarding the dose of midazolam at which the ceiling effect is reached. Consistent with the testimony of Drs. Antognini, Buffington, and Van Norman, the court found that there are no human studies that have established the dose at which there is a true ceiling effect. The court's rationale is adequately explained, and there are sufficient findings to facilitate appellate review. Having reviewed the expert testimony and the medical literature received as evidence, we see no clear error in the district court's findings about the lack of scientific consensus or human studies establishing a ceiling effect for midazolam.

The prisoners also challenge the district court's denial of their motion for a new trial. They argue that new evidence of the federal government's ability to acquire pentobarbital for use in federal executions merits a new trial. Setting aside whether the State would have the same access to pentobarbital, this evidence was not material. The prisoners failed to establish that the State's existing method was sure or very likely to cause needless suffering, so the State was not required to consider alternative methods. The district court did not abuse its discretion in denying the motion.

* * *

The judgment of the district court is affirmed.

KELLY, Circuit Judge, concurring.

The court concludes that, "[w]ith no scientific consensus and a paucity of reliable scientific evidence concerning the effect of large doses of midazolam on humans, the district court did not clearly err in finding that the prisoners failed to demonstrate that the Arkansas execution protocol is sure or very likely to cause severe pain." I agree that under our precedent the district court did not clearly err. However, I write separately to highlight how impossible a prisoner's burden has become to succeed on an Eighth Amendment method-of-execution claim, and how hollow our review continues to be as a result.

To begin, I note that the district court did not find that the prisoners offered a "paucity of reliable scientific evidence." The record shows, in fact, that the prisoners presented a substantial amount of scientific evidence supporting their position that persons who receive a 500-mg dose of midazolam are likely to remain aware of painful stimuli such as the second and third drugs in Arkansas's protocol. For example, Dr. Van Norman testified that, "[t]o a virtual medical certainty," a prisoner executed under Arkansas's midazolam protocol "will experience pain and suffering" because midazolam "has no significant clinical analgesic effects" and does not prevent awareness. Dr. Van Norman relied on multiple studies in reaching this conclusion. Of course, the State offered testimony from its own experts, one of whom testified that there is only "speculation" that the protocol would cause prisoners to suffer severe pain. But the prisoners' evidence can only be considered thin if one determines that it is unreliable or inaccurate. The district court did not make findings about the credibility of the experts or the underlying data on which they relied, instead identifying disagreements between the experts and then concluding that the prisoners failed to meet their burden.

More broadly, however, our demand that prisoners present overwhelming "scientific evidence" and show a "scientific consensus" about the effect of drug

dosages that will never ethically be tested on humans has shown itself to be an insurmountable task.

As the court explains, the first prong of the test from Baze and Glossip requires a prisoner to show that a state's method of execution "presents a *risk* that is '*sure or very likely* to cause serious illness and needless suffering.'" Glossip, 576 U.S. at 877 (first emphasis added) (quoting Baze, 553 U.S. at 50 (plurality opinion)). Neither the majority in Glossip nor the plurality in Baze held that this test requires a prisoner to show that there is a "scientific consensus" that a state's method is sure or very likely to cause severe pain.[1] The term "scientific consensus" appears only in Justice Alito's concurrence in Baze, which no other justice joined, and only in the context of the requirement that a prisoner demonstrate that modifying a state's lethal injection protocol would "*significantly* reduce a *substantial* risk of *severe* pain."[2] See Baze, 553 U.S. at 67 (Alito, J., concurring) (quotation omitted).

Nevertheless, in McGehee, this court suggested that establishing a scientific consensus might be part of the prisoner's burden under the Baze and Glossip test. In that case, the district court granted a stay of execution, while acknowledging that there was no "well-established scientific consensus" that the use of midazolam in the Arkansas protocol was very likely to cause severe pain. McGehee, 854 F.3d at 492. But the district court considered the standard proposed by Justice Alito in Baze to be

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[1]In fact, the petitioners in Baze conceded that if the first drug in Kentucky's execution protocol—sodium thiopental—was administered as intended, it would "result in a humane death" and would "eliminate[] any meaningful risk that a prisoner would experience pain from the subsequent injections of pancuronium and potassium chloride." Baze, 553 U.S. at 41, 49 (plurality opinion); see also Glossip, 576 U.S. at 950 (Sotomayor, J., dissenting).

[2]The Supreme Court has used the term "consensus" in assessing whether there is a "national" or "legislative" consensus about evolving standards of decency. See, e.g., Atkins v. Virginia, 536 U.S. 304, 311–13 (2002).

"a high bar to reach and level of certainty to achieve," in part due to "the limitations of human study at 500 mg, 1,000 mg, or higher doses of midazolam." Id. at 492–93. In vacating the district court's decision, this court stated, "If there is no scientific consensus and a paucity of reliable scientific evidence concerning the effect of a lethal-injection protocol on humans, then the challenger might well be unable to meet [the burden set forth in Baze and Glossip]." Id. at 493. The court concluded that the "equivocal evidence" in that case "[fell] short of demonstrating a significant possibility that the prisoners will show that the Arkansas protocol is 'sure or very likely' to cause severe pain and needless suffering." Id. Since McGehee, we have cited a lack of "scientific consensus" in rejecting two additional method-of-execution challenges. See Williams v. Kelley, 854 F.3d 998, 1001 (8th Cir. 2017) ("As in McGehee, the evidence is 'equivocal,' lacks 'scientific consensus' and presents 'a paucity of reliable scientific evidence' on the impact of the lethal-injection protocol on a person with Williams's health conditions." (quoting McGehee, 854 F.3d at 492–93)); Bucklew v. Precythe, 883 F.3d 1087, 1096 (8th Cir. 2018) (concluding that prisoner failed to establish his risk of severe pain would be substantially reduced by alternative method of execution because his evidence was "equivocal, lack[ed] scientific consensus and present[ed] a paucity of reliable scientific evidence" (quotation omitted)), aff'd, 139 S. Ct. 1112 (2019).[3] Today, the court relies on this language again.

It is true that the test from Baze and Glossip creates a high bar. See Barr v. Lee, 140 S. Ct. 2590, 2591 (2020) (per curiam) (explaining that a claim challenging an execution protocol "faces an exceedingly high bar"); see also In re Ohio Execution

[3]In affirming our Bucklew decision, the Supreme Court did not use the term "scientific consensus." Instead, it concluded that the risks asserted by Bucklew "rest[ed] on speculation unsupported, if not affirmatively contradicted, by the evidence" and that "the record contain[ed] insufficient evidence" to support his argument that his alternative method of execution would eliminate the substantial risk of severe pain. Bucklew, 139 S. Ct. at 1130.

Protocol Litig., 946 F.3d 287, 290 (6th Cir. 2019); In re Ohio Execution Protocol, 860 F.3d 881, 886 (6th Cir. 2017) (describing plaintiff's burden as a "rigorous showing"). It is also true that other circuits have made clear that speculative evidence cannot meet this standard. See Wellons v. Comm'r, Ga. Dep't of Corr., 754 F.3d 1260, 1265 (11th Cir. 2014) ("We have held that speculation that a drug that has not been approved will lead to severe pain or suffering 'cannot substitute for evidence that the use of the drug is sure or very likely to cause serious illness and needless suffering.'" (quoting Mann v. Palmer, 713 F.3d 1306, 1315 (11th Cir. 2013))); Whitaker v. Livingston, 732 F.3d 465, 469 (5th Cir. 2013) ("[S]peculation cannot substitute for evidence that the use of the drug is sure or very likely to cause serious illness and needless suffering." (quoting Brewer v. Landrigan, 562 U.S. 996, 996 (2010))); Cooey v. Strickland, 589 F.3d 210, 231 (6th Cir. 2009) ("Uncertainties built on so many other uncertainties cannot show a substantial risk of severe pain and needless suffering."). However, rejecting "speculation" or "[u]ncertainties built on so many other uncertainties" is not the same as demanding a showing of "scientific consensus." No other circuit imposes such a stringent requirement. And, in my view, our case law has conflated a demanding legal standard with the factual question of whether a scientific consensus exists. Establishing a scientific consensus is not required under Supreme Court precedent and, in this context, it is a nearly impossible standard for prisoners to meet.

The Supreme Court repeatedly uses the term "risk" in describing what a prisoner must show to prevail on an Eighth Amendment method-of-execution claim. See Glossip, 576 U.S. at 877 (explaining that a plaintiff must show "a substantial risk of serious harm, an objectively intolerable risk of harm that prevents prison officials from pleading that they were subjectively blameless for purposes of the Eighth Amendment" (cleaned up) (quoting Baze, 553 U.S. at 50)). It may be that the use of the word "risk" reflects the inherent uncertainty involved—both in the fact that the potentially harmful state action has not yet occurred and in the fact that all science carries a degree of uncertainty. Moreover, the Supreme Court has suggested that

courts are ill-equipped to assess whether the scientific community has reached a "consensus" on a particular issue. See id. at 882 ("[C]hallenges to lethal injection protocols test the boundaries of the authority and competency of federal courts. Although we must invalidate a lethal injection protocol if it violates the Eighth Amendment, federal courts should not 'embroil themselves in ongoing scientific controversies beyond their expertise.'" (cleaned up) (quoting Baze, 553 U.S. at 51)); Baze, 553 U.S. at 105 (Thomas, J., concurring) ("Which brings me to yet a further problem with comparative-risk standards: They require courts to resolve medical and scientific controversies that are largely beyond judicial ken."). But here, there is an additional layer of "risk": current execution protocols—including Arkansas's—involve the administration of drugs at dosages that have never been tested in humans and likely never will be.

The uncertainty about midazolam's ceiling effect in this case exemplifies the problem with demanding a "scientific consensus." The prisoners' experts testified that midazolam likely has a ceiling effect at doses between 20 mg to 40 mg. The State's experts opined that there are no human studies confirming a ceiling effect for midazolam and sought to undermine the studies relied on by the prisoners by emphasizing that those studies did not administer 500-mg doses of midazolam. The district court ultimately concluded that, "[e]ven if there is general medical consensus that Midazolam has a ceiling effect, there is no such consensus on the dose of Midazolam at which a ceiling effect is exhibited."[4] But again, one of the reasons for this lack of consensus is the lack of reliable clinical studies. And Dr. Antognini, one

[4]Of course, the existence of a ceiling effect and the dose at which it is reached are relevant only if there is some lower dose at which a person would remain aware of painful stimuli. Moreover, "the precise *dose* at which midazolam reaches its ceiling effect is irrelevant if there is no dose at which the drug can, in the Court's words, render a person 'insensate to pain.'" See Glossip, 576 U.S. at 964 (Sotomayor, J., dissenting).

of the State's experts, acknowledged the "ethical issues" of using large doses of midazolam in human studies. He testified that "you would have to give more [midazolam] to really say that there's a true ceiling effect" but added that "they can't do that" because study "volunteers would take a long time to wake up" and "[t]he ethics committee would never approve that." Because a study using 500 mg of midazolam cannot be conducted, there will continue to be a degree of speculation—and thus a lack of consensus—about the effect of such a dose. At least where the science is now, the only "studies" using such a high dose of midazolam will be the execution of prisoners—individuals who will be paralyzed during the administration of subsequent drugs and unable to explain afterwards whether they experienced any pain. See In re Ohio Execution Protocol, 860 F.3d at 887 (calling it "obviously correct" that "there are not now and never will be clinical studies of the effect of injecting 500 mg of midazolam into a person" and "we certainly cannot ask the executed whether they experienced pain after the injection of midazolam" but nevertheless emphasizing that "the applicable legal standard requires the plaintiffs to prove their allegations to a high level of certainty").

In choosing an execution protocol, states can select dosages that have not been reliably studied, and experts will likely continue to disagree about the effect of those dosages on human subjects and about the degree of uncertainty involved. That is, of course, the nature of science and the scientific method. But if those disagreements persist—and based on the evidence presented in this case, a reliable study that would answer the midazolam ceiling effect question is not currently possible—it is unclear how a prisoner could ever prevail in a method-of-execution challenge to a lethal injection protocol under this circuit's current standard.
